

REMARKS

By way of overview, claims 1—70 are currently pending. Of these pending claims:

- A) Claims 1 and 4 are currently amended;
- B) Claims 2, 3 and 5—13 are original; and
- C) Claims 14—70 are withdrawn.

35 U.S.C. §112 Rejections

The Patent Office rejected Claims 1—13 as being indefinite for failing to point out and distinctly claim the subject matter regarded as the invention. While Applicants do not acquiesce to the Examiner's rejection, the Applicants have made clarifying amendments to Claims 1—13. As such, without more direction from the Office pointing out the alleged failings, the Applicants submit that Claims 1—13 particularly point out the subject matter of the invention.

Additionally, the Patent Office submits that Claims 1—13 are incomplete for omitting essential elements, which the Office enumerated with specificity. In particular, the Office submits that it is unclear as to how the containment portion in combination with the substrate encloses a fluidic channel. The Applicants would like to give one example of this portion of the claimed apparatus. As background, a fluidic micro electro-mechanical system is capable of conveying, holding and/or interfacing with fluids (see Applicants' specification as filed at paragraph [0008]). In the example implementation of Fig. 5, as discussed at [0025] and other locations, the substrate 120 and containment portion 130 are joined at junction 121. Accordingly, one or more fluidic channels 124 are defined in the containment portion 130, such as by a function of the shape of the

1 containment portion 130. Fig. 4 shows another view of the fluidic channel 124.
2 Accordingly, the Applicants submit that the claims, in view of the specification as
3 filed, are clear as to how the containment portion in combination with the substrate
4 encloses a fluidic channel.

5 The Patent Office further submits that the positioning of the cross-linked
6 polymer regions with respect to the fluidic channel is unclear. In response, the
7 Applicants would like to clarify this point. The cross-linked polymer regions are
8 formed in part by exposure of polymeric material to UV light. In a first example
9 of cross-linking seen at [0044] and Fig. 6c, sufficient UV not blocked by the mask
10 614 "hardens" portions of the polymer layer 608 to defined "sides" 620 of the
11 fluidic channel by deeply cross-linking these regions. In a second example of
12 cross-linking seen at Fig. 6d, less UV light "hardens" a thinner portion of the
13 polymer layer 608 to form a "top" to the channel 124. Note that the channel 124
14 actually appears in Fig. 6e after the polymer unexposed to UV is "developed
15 away," as discussed with respect to block 710 of Fig. 7 at [0050] and other
16 locations. By comparison of Figs. 6d and 6e, it can be seen that both masks 614,
17 615 block UV to the area shown in Fig. 6e as through hole 126. Thus, because
18 one mask (mask 614 of Fig. 6c) blocks the heavy dose of UV, and another mask
19 (mask 615 of Fig. 6d) blocks the light dose of UV, the through hole region of 126
20 in Fig. 6e is not exposed, and therefore is not cross-linked and is susceptible to
21 "developing away." Thus, the polymeric material originally in the through hole is
22 "developed away," as per block 710 of Fig. 7, thereby defining the channel. In
23 summary, in answer to the Office's question (regarding "the positioning of the
24 cross-linked polymer regions with respect to the fluidic channel"), in one example,
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1 the cross-linked (e.g. "UV exposed") polymer regions form the sides, top, etc., of
2 the fluid channel regions. (See [0051] at lines 7—9 of that paragraph, where the
3 Specification says, "The cross-linked polymer material therefore forms the
4 boundaries along with an upper surface and the lateral surfaces of the substrate of
5 the fluidic channels 124".)

6 The Patent Office wonders if the fluidic channels contain the polymer
7 material as well. The Applicants suggest that the polymer material "**defines**" the
8 channel, much as a pipe "defines" a channel. Thus, it is submitted that the fluidic
9 channels do not contain polymer, as they would not be effective as channels if
10 they were so configured. While Claim 1 recites the structure of the resulting
11 apparatus, it can be seen that in the manufacture of such an apparatus, the
12 unexposed polymer is developed away (see block 710 of Fig. 7). Thus, the
13 channels are empty, and ready for fluid.

14 Accordingly, a fluidic micro electro-mechanical system is defined
15 according to the elements of the claims, as recited. The apparatus is configured
16 for a variety of fluid-related purposes. It includes a structure having novel and
17 non-obvious features. Such features include, but are not limited to, the deep cross-
18 linked polymer region and the shallow cross-linked polymer region of the
19 containment portion, which are formed as a unitary structure. While the above
20 discussion explains one or more examples of the claimed material, the above
21 discussion is intended only as background, and not as a portion of the claims, their
22 limitations or their interpretation.

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Conclusion

The Applicants submit that all of the claims are in condition for allowance and respectfully requests that a Notice of Allowability be issued. The Examiner is urged to contact the undersigned if any issues remain related to the allowability of the claims.

Respectfully Submitted,

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